

July 9, 1929.

L. D. LICHTY
FUMIGATED FURNITURE

1,719,940

Filed Aug. 15, 1923

Fig. 1.

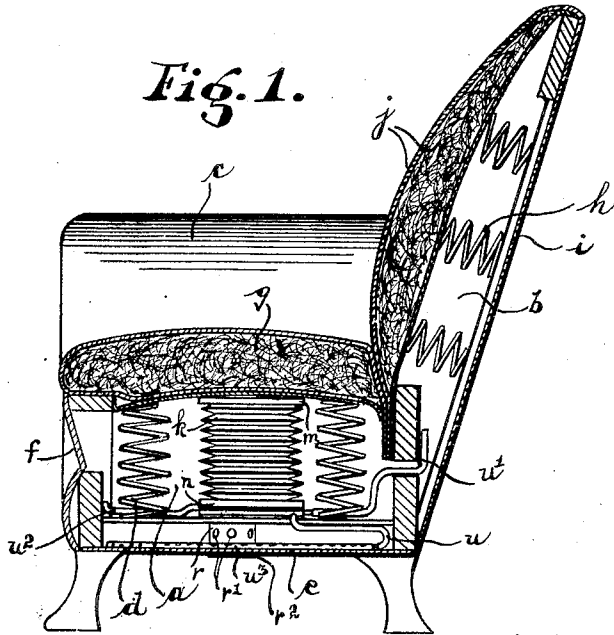


Fig. 2.

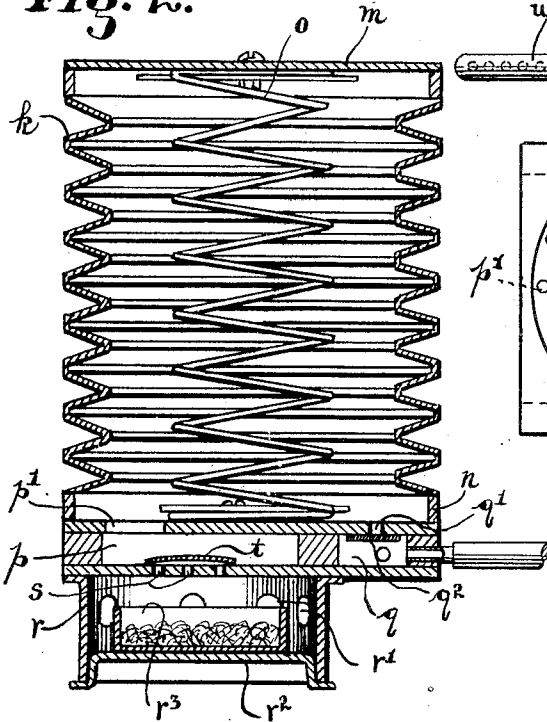
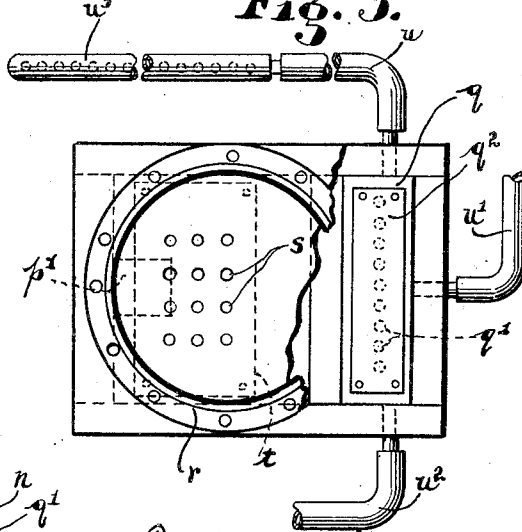


Fig. 3.



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FUMIGATED FURNITURE.

Application filed August 15, 1928. Serial No. 299,683.

My invention relates to fumigated furniture, and more particularly to the embodiment therein of automatically acting means for thoroughly disseminating the fumes of an insecticide throughout the upholstered portions of articles of furniture.

It is a well known fact that certain kinds of upholstery upon articles of furniture, whether the same be in a showroom or in the home, are subject to attack from moths and other insects, and that these insects generally conceal themselves within the cracks or creases at the junction of the seat and of the arms and back, but sometimes are present in the padding or stuffing material itself.

It has heretofore been proposed to employ devices in furniture, constructed in different ways, so as to subject different parts of the upholstery of the furniture to fumes of insecticides. Such devices have not gone into extensive use because of the ineffective application thereby of the insecticide to the necessary parts of the furniture.

With the above conditions in mind, I have provided a mechanism to be used in conjunction with the springs of upholstered furniture, so that the depression of the seat of the chair against the tension of the springs, will forcibly eject the fumes of an insecticide throughout the various hollow spaces of a chair covered with the upholstery in a manner to ensure an adequate supply of such fumes to ensure their penetration about all parts of the chair where moths or other insects might conceal themselves.

The device is so constructed as to not only ensure the forcible ejection of the fumes adjacent the point where they will be most effective, but will ensure an adequate supply of such fumes at all times, in anticipation of such ejection. By this mechanism, air, heavily laden with the fumes, may be delivered to the chair by means of a pumping mechanism which will be actuated as a result of the compression of the springs of the seat.

The device is so constructed as to permit the convenient renewal of the supply of volatile insecticide as required, without disturbing the mechanisms effective for ensuring the distribution of the fumes. Its construction is also such that, if desired, it may be used in lieu of one of the springs of the chair and thus have, in its action, the two-fold function of contributing toward the cushion-

ing of the seat, as well as acting as an insecticide distributor.

The invention consists primarily in fumigated furniture embodying therein a flexible casing, a spring normally distending said casing, an insecticide container, a valve controlled connection between said container and said casing, a distributing chamber, distributing tubes leading therefrom to different portions of an article of furniture, and a valve controlled connection between said distributing chamber and said casing; and in such other novel features of construction and combination of parts, as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Fig. 1 is a vertical section through an arm chair including therein a fumigating device embodying the invention;

Fig. 2 is an enlarged cross sectional detail view of the fume distributing device; and

Fig. 3 is a bottom view thereof partly broken away.

Like letters refer to like parts throughout the several views.

In the embodiment of the invention shown in the the drawings, it is illustrated in connection with an upholstered arm chair, said chair being shown more or less conventionally. In this showing of the application of the invention, there is the usual spring chamber *a* below the upholstered seat of the chair, communicating with the space within the arms *c* of the chair. The seat spring rigging *d* is of the usual construction and arrangement. The bottom of the chamber is closed by the fabric *e*, and the front and sides by tapestry or other upholstery material *f*. The seat is padded as indicated at *g*, this padding being enclosed in fabric, the upper face of which is ordinarily of the same tapestry as the material *f*.

The back of the chair may be provided with spring rigging *h* seated in the chamber *b*, closed at the back by fabric *i*, the front being suitably padded and faced with tapestry as shown at *j*. The sides of the chamber *b* are ordinarily closed by the back frame of the chair.

While, in the drawings, I have shown the back of the chair as being equipped with springs and as having a spring chamber to

accommodate same, this is not at all essential, and in most chairs this construction is not used, a padding similar to *j* being solely relied upon to cushion the back of the chair.

5 The purpose of the invention is to so distribute insecticide fumes as to have them permeate, as much as possible, the entire body of padding in the chair, and the various chambers are utilized merely as a means
10 of distribution of the fumes throughout the padding.

The invention has not to do with the details of construction of the furniture, but to a mechanism for incorporation in the spring
15 cushion seat of any article of furniture, by which the insecticide fumes will be forcibly delivered adjacent different portions of the padding or stuffing so as to thoroughly penetrate same, particularly adjacent those portions thereof where the insects tend to hide.
20 It is desirable, however, to also distribute these fumes throughout the body of the padding or stuffing, since some insects germinate in such material and feed upon same.

25 Mounted in relation to the spring rigging *d* is a flexible casing *k* closed at the top by a rigid frame *m* and supported at the bottom by a rigid frame *n*. Between the frames *m* and *n* is a spring *o*, tensioned to normally
30 distend the flexible casing *k* to the maximum extent permitted by the spring rigging. The bottom frame *n* is provided with means forming a chamber *p* communicating through the port *p'* with the casing *k*, and
35 means forming a distributing chamber *q* communicating with the casing *k* through ports *q'* controlled by a valve *q²* consisting of a flexible strip, as shown more particularly in Fig. 3. Since the aggregate of the
40 ports *q'* is fairly large, the valve strip *q²* may be secured to the fitting *n* at each corner thereof so as to cause the valve action to be a bulging of the strip instead of the ordinary flap valve action. This, however, is immaterial.
45

Carried by the bottom fitting *n* is a container *r* for a volatile insecticide, this container having air intake ports *r'* through the sides thereof, and a removable bottom *r²* exposed below the facing fabric *e* and adapted
50 to support the box or other receptacle *r³* for the insecticide.

The container *r* communicates with the casing *k* through a plurality of ports *s* in the bottom of the fitting *n* and communicating with the chamber *p*, which ports are valve controlled by means of a flexible valve strip, the construction and arrangement of which is the same as the valve strip *q²*, except that these strips are oppositely set with
60 relation to the pressures applied thereto as a result of the partial collapsing or extension of the casing *k*.

Leading from the distributing chamber *q*
65 are a plurality of distributing tubes *u*, *u'* and

u², which tubes ordinarily are flexible rubber tubes connected with the distributing chamber by means of nipples, as shown. The distributing tube *u* is provided with a distributing fitting *u³* closed at one end and
70 having a series of discharge openings as shown, this fitting being positioned within the spring chamber *a* and serving to thoroughly disperse the fumes throughout the length of this fitting. The tubes *u'* and *u²*
75 are merely open-ended, since the same wide distribution of the fumes is not required at the points with which these tubes communicate, as adjacent the seat, the portions of the upholstery most subject to attack by
80 the insects being about the seat portion *g* fumigated by means of the fitting *u*.

The operation of the herein described device is substantially as follows:—

The casing *k* and its appurtenances is
85 mounted adjacent the springs of the spring rigging *d* with the top frame *m* contacting with the upper straps of this rigging, and the frame *n* resting upon the lower straps thereof. If desired, this casing may be
90 substituted for one of the spring in the rigging, and the spring *o* relied upon to give the desired spring support at the point where the casing is mounted. When the casing is used in a chair, it is preferable to
95 locate it substantially centrally of the seat where the flexible casing will have the greatest range of amplitude as a result of the movements of the seat cushion *g* either upon the occupancy of the chair, or by the
100 depression thereof by an attendant in a showroom.

Of course it is obvious that in sofas a plurality of such casings may be used, or the proportions thereof may be increased, preferably the former, so as to ensure the
105 delivery of an adequate supply of the insecticide fumes upon the collapsing or partial collapsing of the casing *k* against the tension of the spring *o*. The tubes *u*, *u'* and *u²*
110 may be laid through the framework of the chair, to any desired point, during the operation of upholstering the chair.

With the parts assembled in the manner shown in Fig. 1, the depression of the seat
115 *g* will cause a partial collapsing of the casing *k* which, as shown, has a bellows-like construction, thus displacing the gasiform contents of the casing, forcing them through the ports *q'* into the distributing chamber *q*,
120 and through the various tubes *u*, *u'* and *u²* to different points of the article of furniture. This collapsing of the casing is against the tension of the spring *o*. With the collapsing of the casing *k*, the valve *q²* will be
125 automatically opened, and the valve *t* will be automatically closed.

When the pressure upon the chair seat *g* is relieved, the spring *o* and the springs of the rigging *g* will expand, thus extending
130

the casing *k* to its maximum extent, during which action insecticide fume laden air will be drawn from the container *r* through the valve controlled ports *s* to within the casing through the chamber *p* and port *p'*. During this action, the valve *q*² will be automatically closed. This action will be repeated with each compression of the seat *g* and will ensure the forcible delivery of an adequate volume of the fumes to different portions of the chair with each collapsing of the casing *k*. It will also ensure the casing *k* being filled at all times with the fume laden air and prevent the escape of same from the container *r* or from the casing at all times except upon the depression of the seat.

It is to be noted that the container as well as the casing is completely contained within the chamber *a*, and that under normal circumstances the air and fumes in such chamber is inert. This is also true of the chamber *b* and of the padded or upholstered portion *g* of the seat and *j* of the back. The force with which the fume laden air is delivered through the tubes *u*, *u'* and *u*² is sufficiently great to afford a thorough distribution thereof about the portions of the chair where these tubes discharge, and the expansion of the padding *g* of the seat, and *j* of the back, upon the release of pressure thereon will draw the fumes within the padding or stuffing itself.

While the insecticide in the container *r* will last for a considerable time, I preferably provide the removable closure *r*² exposed exteriorly of the bottom facing *e*, so that the supply of insecticide may be renewed without disturbing the upholstery in any way.

The various parts of the device, excepting the spring *o*, the casing *k* and the valve flaps, may be made of wood, although the material used is a minor consideration.

With a device of the character herein described, the depression of the seat *g* will always have the effect of delivering the insecticide fume laden air to different parts of the upholstery of the article of furniture. Furthermore, the construction described ensures the delivery only of the gas which is passed through the container *r*, and its arrangement and construction is such that there is an effective compression of such fumes necessary to their forcible delivery to the body of the upholstery, and also an effective suction for securing an adequate supply of fumes within the casing *k*. Furthermore, the arrangement of the device is such that with the depression of the seat *g*, the casing will be sufficiently collapsed, while filled with the insecticide fume laden air, to always ensure the delivery of such to the upholstery of the chair.

It is not my intention to limit the inven-

tion to the precise details of construction and combination of parts shown in the drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. Fumigated furniture embodying therein a flexible casing, a spring normally distending said casing, an insecticide container, a valve controlled connection between said container and said casing, a distributing chamber, distributing tubes leading therefrom to different portions of an article of furniture, and a valve controlled connection between said distributing chamber and said casing.

2. Fumigated furniture embodying therein a flexible casing, rigid top and bottom frames therefor, said rigid bottom frame having therein a distributing chamber, and a valve controlled port establishing communication between said chamber and said casing, an insecticide container secured to the bottom of said rigid bottom frame, said bottom frame having a valve controlled port of communication between said container and said casing, tubes leading from said distributing chamber to different portions of an article of furniture, and a spring normally distending said casing.

3. Fumigated furniture embodying therein a flexible casing, rigid top and bottom frames therefor, said rigid bottom frame having therein a distributing chamber, and a valve controlled port establishing communication between said chamber and said casing, an insecticide container secured to the bottom of said rigid bottom frame, said bottom frame having a valve controlled port of communication between said container and said casing, tubes leading from said distributing chamber to different portions of an article of furniture, and a spring within said casing and acting between said top and bottom frames with a normal tendency to distend said casing.

4. Fumigated furniture embodying therein a flexible casing, rigid top and bottom frames therefor, said rigid bottom frame having therein a distributing chamber, and a valve controlled port establishing communication between said chamber and said casing, an insecticide container secured to the bottom of said rigid bottom frame, and having openings through the side wall thereof and an open bottom, a removable closure for said open bottom permitting access through said container for renewing the insecticide supply, said bottom frame having a valve controlled port of communication between said container and said casing, tubes leading from said distributing chamber to different portions of an article of furniture,

and a spring normally distending said casing.

5 5. Fumigated furniture embodying therein a flexible casing, a spring normally distending said casing, an insecticide container, a valve controlled connection between said container and said casing, a distributing chamber, distributing tubes leading therefrom to different portions of an article of
10 furniture, one of said tubes communicating with an elongated fitting having a plurality of discharge openings therein, and a valve controlled connection between said distributing chamber and said casing.

15 6. Fumigated furniture embodying therein a flexible casing, rigid top and bottom frames therefor, said rigid bottom frame having therein a distributing chamber, and a port of communication between said chamber and said casing, a flexible valve adapted
20 to close said port when said casing is being distended, an insecticide container secured to the bottom of said rigid bottom frame, said bottom frame having a port of commu-

nication between said container and said casing, a flexible valve adapted to close said port upon the collapsing of said casing, and a spring normally distending said casing. 25

7. Fumigated furniture embodying therein a flexible casing, rigid top and bottom frames therefor, said rigid bottom frame having therein a distributing chamber, and a port of communication between said chamber and said casing, a flexible valve adapted to close said port when said casing is being
30 distended, an insecticide container secured to the bottom of said rigid bottom frame, said bottom frame having a port of communication between said container and said casing, a flexible valve adapted to close said
40 port upon the collapsing of said casing, and a spring within said casing and acting between said top and bottom frames with a normal tendency to distend said casing. 35

In witness whereof I have hereunto affixed
45 my signature, this 14th day of August, 1928.

LUTHER D. LICHTY.